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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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In the Application of:

MASAHIRO NOZAKI

SERIAL NO.: 09/630,462

FILED: AUGUST 2, 2000

FOR: POLYAMIDE COMPOSITIONS FOR MOLDING

CASE NO.: AD 6629 US NA

GROUP ART UNIT: 1711

EXAMINER: A. L. WOODWARD

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Assistant Commissioner for Patents
Washington, DC 20231

Response

In response to the Official Action in the above identified application mailed August 22, 2002 Applicant submits the following response. A petition for a three month extension of time is filed concurrently herewith.

Claims 1-5 are pending in this application.

The Rejection of Claims 1-5 under 35 USC 103(a) as unpatentable over Payne et al in view of Mordecai et al.

In the Office Action, all claims are rejected as being unpatentable over U.S. 5,965,655 (Mordecai et al) and U.S.5,013,786 (Payne et al). It will be helpful at the outset for Applicant to briefly summarize the salient features of the present invention, and then to contrast the invention from the cited references.

Applicant's Invention

The claims of the present application are directed to compositions suitable for molding comprising (A) 10 to 94 weight percent polyamide, (B) 3 to 25 weight percent elastomer and (C) 3 to 65 weight percent wollastonite, with the elastomer selected from a particular group as recited in the claims and the wollastonite having particular dimensions (including a number average length, average diameter and average aspect ratio) again as recited in the claims. These compositions can be molded to produce articles having well-balanced mechanical strength and impact resistance,

low warpage, and excellent sliding properties. Such articles are also good candidates for regenerated products and are readily colorable to meet aesthetic needs.

Payne et al

Payne et al disclose at lines 42 to 48, column 1 that the object is to provide filler-containing polyamide molding materials which are not inferior to the known filler-containing polyamide molding materials in their mechnical properties but possess improved coatability. Particular emphasis is placed on a substantially better coat adhesion, and a visually more attractive surface, as described therein. The polyamide molding materials are prepared by a conventional process to mix 42 to 90 weight percent of a thermoplastic polyamide, 9.5 to 55 weight percent of fillers such as wollastonite (the examples use wollastonite having mean a particle size of 3.5 μm as shown at lines 44 to 45, column 7) and 0.5 to 3 weight percent of a rubber impact modifier which has reactive groups for the improvement in the coatability and the improved surface structure, such as EPM or EPDM(see line 67 to line 28, column 5). However, as Examiner recognizes, Payne et al does not disclose the dimensional characteristics of the wollastonite recited in Claim 1.

Mordecai et al

Mordecai et al disclose thermoplastic molding compositions to manufacture molded articles having a lower coefficient of thermal expansion (CTE) to avoid excessive expansion of plastic parts in high temperature environments and a high or improved distinctness of image (DOI) representing smoothness of surface of the molded article. The teachings reveal an admixture of (1) a thermoplastic polymer including polyamide, an aromatic polycarbonate, a rubber modified homopolymer or copolymer of vinyl aromatic monomer, a polyphenylene ether, and blends thereof, and (2) a calcium meta silicate mineral (wollastonite) having needle-like particles. These needle-like particles feature a number average mean diameter of about 0.1-10 micron and a number average aspect ratio of length to diameter of up to about 6 (or about 1 to about 10). The reference discloses examples of polyamide blends with 40 parts by weight of polyphenylene ether, 36 parts of polyamide, 10 parts of elastomer

and 14 parts of calcium silicate, more commonly referred to as wollastonite, and have an average mean diameter based on number average of less than about 4.5 μm and an average mean length of about 24μm (as described at lines 53 to 56, column 14) (Example 25-33 at lines 11, column 19 to line 14, column 20).

However, Mordecai et al gives no instruction for preparing polyamide compositions useful to mold articles with lower warpage due to the presence of wollastonite having a particular aspect ratio. Such a desirable result is shown in Table 1 of the instant application by comparing Example 1(including wollastonite with an aspect ratio of 4:1 to 14:1) with Comparative Examples 2 (including wollastonite with aspect ratio of 15:1) and 7 (including glass fiber with aspect ratio of 300:1); and by comparing Example 5 with Comparative Example 3 (including glass fiber with aspect ratio of 300:1). Although Mordecai et al discuss wollastonite at line 8, column 11 to line 20, column 12, and include discussion of its aspect ratio, there is no disclosure of wollastonite specified by the exact number average length, number average diameter and average aspect ratio as recited in Applicant's claims. Not surprisingly the results identified by Applicant due to the use of such particular wollastonite with polyamides and the specified elastomers (all as indicated in Table 1) are not featured in the reference.

Moreover, Mordecai et al clearly state (at lines 14 to 20, column 12) that "the results achieved as shown in the Examples are not achieved with previously known fibers such as carbon fibers, mica, talc, glass fibers, and even previously known wollastonite, other than the wollastonite having the particle morphology disclosed in this invention". Therefore, since Mordecai et al requires a particular wollastonite it cannot be combined with Payne et al to reveal Applicant's invention, as this statement provides a disincentive for their combination.

In addition, Mordecai et al confirmed the effectiveness by measuring CLTE, N-Izod and surface quality, such as for Class A surfaces. This is a different direction of research versus the objective of the present invention in which Applicant prepared compositions providing well-balanced strength and toughness, low warpage and low friction properties, even after injection molding used parts, such as spru and runner.

This is yet another indication that the skilled artisan would not consider Mordecai et al in any effort to derive Applicant's invention.

Conclusion

Altogether, the references do not teach or suggest the claimed improvement. Reconsideration of allowance of the claims 1-5 herein is respectfully solicited.

Respectfully submitted,

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